



VTRAK
J610s, J310s
PRODUCT MANUAL

Version 1.0

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Recommendations

In this *Product Manual*, the appearance of products made by other companies, including, but not limited to software, servers and disk drives, is for the purpose of illustration and explanation only. Promise Technology does not recommend, endorse, prefer, or support any product made by another manufacturer.

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Chapter 1: Introduction

- About This Manual (below)
- Overview (page 2)
- Architectural Description (page 4)
- Features and Benefits (page 5)
- Specifications (page 6)

Thank you for purchasing Promise Technology's VTrak J610s or J310s external disk array subsystem.

About This Manual

This *Product Manual* describes how to setup, use and maintain the VTrak J610s or J310s external disk subsystem. It also describes how to use the built-in command-line interface (CLI) software.

This manual includes a full table of contents, index, chapter task lists and numerous cross-references to help you find the specific information you are looking for.

Also included are four levels of notices:



Note

A *Note* provides helpful information such as hints or alternative ways of doing a task.



Important

An *Important* calls attention to an essential step or point required to complete a task. Important items include things often missed.



Caution

A *Caution* informs you of possible equipment damage or loss of data and how to avoid them.



Warning

A *Warning* notifies you of probable equipment damage or loss of data, or the possibility of physical injury, and how to avoid them.

Overview

The Promise VTrak J610s and J310s are optimized for organizations deploying cost-effective small-to-medium application clusters, disk-to-disk backup and midrange storage solutions.

Figure 1. VTrak J610s front view with bezel removed

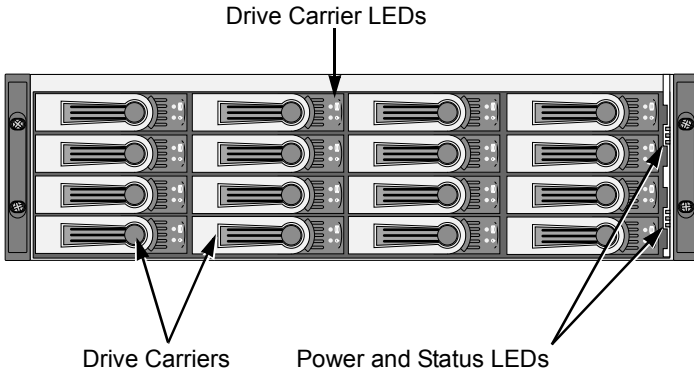
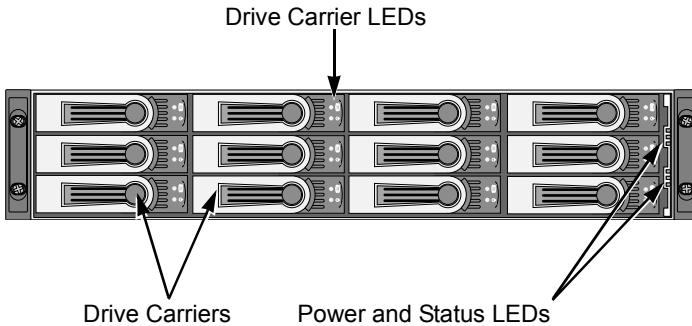
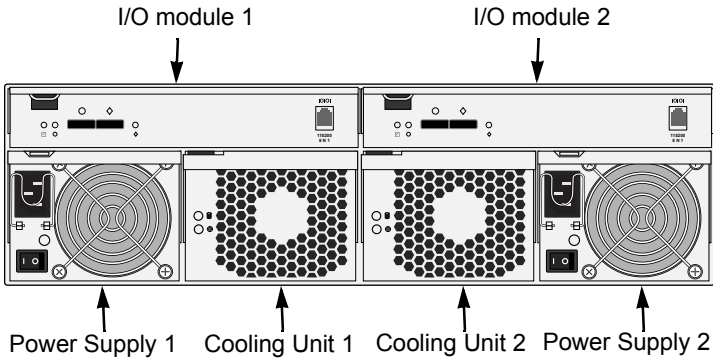
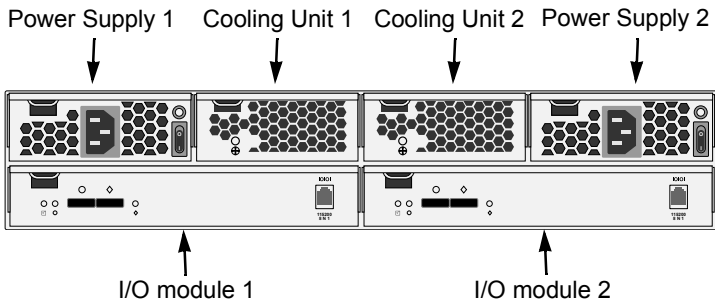


Figure 2. VTrak J310s front view with bezel removed



The dual 3Gb SAS host interface ports offer the ease of management and performance required by companies running popular departmental and back-office applications including file/print, e-mail, database and Web services

Figure 3. VTrak J610s rear view**Figure 4. VTrak J310s rear view**

The two external SAS ports provide the needed connectivity and bandwidth for large capacity solutions requiring multiple JBOD boxes cascaded together while still providing dual server support and host port failover or aggregation.

Architectural Description

The VTrak J610s packs up to 16 drives per system, offering industry-leading capacity in just 3U of standard 19-inch rack space. The VTrak J310s supports up to 12 drives per system, in just 2U of standard 19-inch rack space. The J610s and J310s unit's compact form factor maximizes density, increasing capacity per unit of rack space.

Multiple J610s and J310s systems can also be connected to the same server using standard SAS features to deliver massive storage to capacity hungry applications such as disk-to-disk backup, media archiving, video surveillance and compliance storage

Promise has designed the J610s and J310s chassis to be fully compatible with all future Promise external storage products. By using the same chassis, drive carriers, and cooling units, upgrading the RAID controllers and JBOD modules is fast and simple.

With the VTrak J610s and J310s, Promise has dramatically narrowed the gap between simple fault tolerance and *No Single Point of Failure*. The VTrak J610s and J310s use a fully redundant, hot-swap design and continuously monitors all system components. It can withstand failures to disks, power supplies, cooling and I/O modules without interrupting system operation.

Features and Benefits

Feature	Benefit
3U or 2U 19-inch wide enclosure	Installs easily in any standard rackmount.
Supports Serial Attached SCSI disk drives	Allows you to use the new dual-port SAS disk drives.
Supports Serial ATA disk drives	Allows you to use your legacy SATA disk drives.
Hot-swap feature for drive carriers, I/O modules, power supplies and fans	Allows a defective component to be replaced without interrupting data accessibility to the host system.
Tool-less field-replaceable units (FRUs)	All FRUs can be replaced without tools, saving time and effort for support personnel.
Complete cable-less design	All components easily plug directly into boards. No cables to complicate setup or maintenance.
Redundant, hot-swappable cooling units	Load sharing and full operation even with multiple failed fans.
Redundant, hot-swappable power supplies	Load sharing and full operation even with a failed power supply.
Dual, active/active I/O Modules	High level of availability even with a failed I/O module.
One host SAS port per I/O module	Two I/O modules are needed to set up clustering.
One expansion SAS port I/O module	Enables cascading JBOD subsystems.
Command-line interface	Control and monitoring with simple, straightforward interface.
Management through in-band SAS or serial port	Choice of local or network management options
Compatible with leading SAS HBA and RAID cards	Easy, works-the-first-time connections with your current systems

Specifications

Drive Capacity: J610s, 16 drives. J310s, 12 drives.

External I/O Ports: SAS host port and SAS expansion port.

Supported Disk Interfaces: Serial Attached SCSI (SAS) and Serial ATA (SATA), 3Gb/s and 1.5Gb/s

Supported Operating Systems:

- Windows Vista, Business, Enterprise, or Ultimate
- Windows 2003 Server
- Windows XP Professional
- Windows 2000
- RedHat Linux
- SuSE Linux
- Novell Netware
- Sun Solaris

The list above refers to 32-bit and 64-bit versions of the OS in the Host PC or server. The actual OS support depends upon your SAS HBA or RAID adapter. Check your SAS HBA or RAID adapter user documentation.

Voltage: 100–240 VAC Auto-ranging.

Current: 8 A @ 100 VAC; 4 A @ 240 VAC Current rating with two power cords

Power Consumption (not including disk drives):

J610s, 108.38 W.

J310s, 100.87 W.

Power Consumption (including disk drives):

J610s, 523.91 W.

J310s, 412.51 W.

Power Supply:

J610s, Dual 500W, 100–240 VAC auto-ranging, 50–60 Hz, dual hot swap and redundant with PFC, N+1 design.

J310s, Dual 400W, 100–240 VAC auto-ranging, 50–60 Hz, dual hot swap and redundant with PFC, N+1 design.

Operating Temperature:

5° to 40°C operational

-40° to 60°C non-operational

Relative Humidity: Maximum 95%

Vibration: Random, 0.21 grms, 5 to 500 Hz, 30 Mins, X, Y, Z axis

Dimensions (H x W x D):

J610s, 13.1 x 44.7 x 56.1 cm (5.2 x 17.6 x 22.1 in)

J310s, 8.8 x 44.7 x 56.1 cm (3.5 x 17.6 x 22.1 in)

Net Weight:

J610s, 30.5 kg (67.2 lb) without drives, 38.5 kg (84.9 lb) with 16 drives, assuming 0.5 kg (1.1 lb) per drive.

J310s, 26.5 kg (58.4 lb) without drives, 32.5 kg (71.7 lb) with 12 drives, assuming 0.5 kg (1.1 lb) per drive.

Gross Weight (including carton):

J610s, 37.5 kg (82.7 lb) without drives.

J310s, 33.0 kg (72.8 lb) without drives.

Safety: CE, FCC Class A, VCCI, C-Tick, cUL, TUV, CB, BSMI, MIC.

Warranty and Support

Warranty: Three years complete system limited warranty.

Support: 24x7 email and phone support (English only). 24x7 access to Promise support site for drivers, firmware, and compatibility.

FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CE Statement

Warning: This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

MIC Statement

A급 기기 (업무용 정보통신기기)

이 기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 만약 잘못판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

Chapter 2: Installation

- Unpacking the VTrak (below)
 - Mounting VTrak J610s in a Rack (page 11)
 - Mounting VTrak J310s in a Rack (page 13)
 - Installing Disk Drives (page 16)
 - Setting Up Data Cable Connections (page 20)
 - Setting Up Serial Cable Connections (page 25)
 - Connecting the Power (page 26)
 - Setting Up the CLI Connection (page 27)
-

Unpacking the VTrak

The VTrak J610s or J310s box contains the following items:

- VTrak J610s or J310s Unit
- *Quick Start Guide*
- Front bezel and key
- RJ11-to-DB9 serial data cable
(Units with one I/O module: 1)
(Units with two I/O modules: 2)
- 1.0m (3.3 ft) SAS cable
(Units with one I/O module: 1)
(Units with two I/O modules: 2)
- Screws for disk drives
(J610s: 70, including 6 spares)
(J310s: 50, including 2 spares)
- Left and right mounting rails
- Left and right center-mount brackets
- 1.5m (4.9 ft) Power cords (2)
- CD with *Product Manual* and *Quick Start Guide*



Warning

The electronic components within the J610s and J310s units are sensitive to damage from Electro-Static Discharge (ESD). Observe appropriate precautions at all times when handling the J610s or J310s unit or its subassemblies.

Figure 1. VTrak J610s rear view

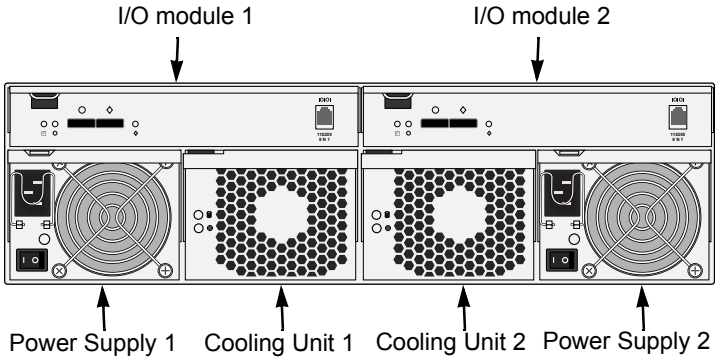
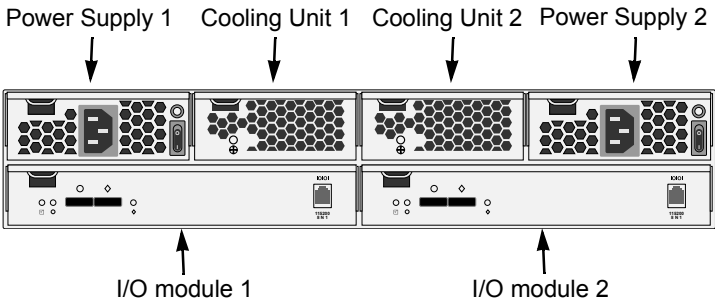


Figure 2. VTrak J310s rear view



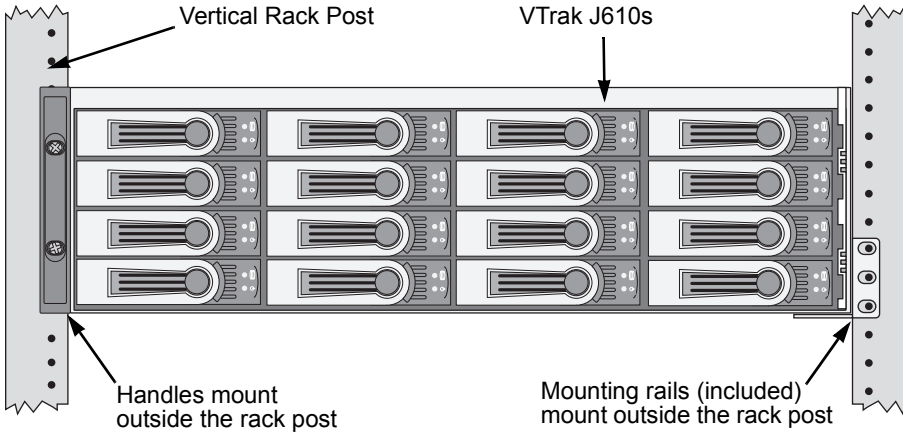
Some J610s and J310s units ship with a single I/O module and a blank unit installed in the place of the second I/O module. You can upgrade your J610s or J310s unit by installing a second I/O module. See page 51.

Some J610s and J310s units ship with a single power supply and an auxiliary cooling unit installed in the place of the second power supply to provide a comparable level of air circulation inside the enclosure.

Mounting VTrak J610s in a Rack

The J610s subsystem installs to the rack using the supplied mounting rails. You can also use your existing rails.

Figure 3. VTrak J610s mounted in a rack with the supplied rails



Cautions

- At least two persons are required to safely lift, place, and attach the VTrak subsystem into a rack system.
- Do not lift or move the VTrak subsystem by the handles, power supplies or the controller units. Hold the subsystem itself.
- Do not install the VTrak subsystem into a rack without rails to support the subsystem.
- Only a qualified electrician who is familiar with the installation procedure should mount and install the VTrak subsystem.
- Be sure all switches are OFF before installing the VTrak subsystem or exchanging components.

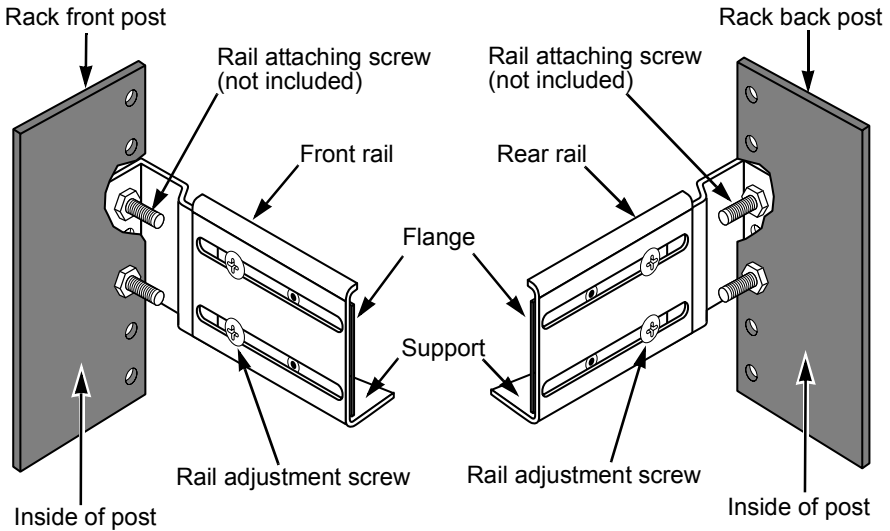
To install the J610s subsystem into a rack with the supplied mounting rails:

1. Check the fit of the mounting rails in your rack system. See Figure 4.
2. Adjust the length of the mounting rails as needed.
3. Attach the mounting rail assemblies to the outside of the rack posts, using the attaching screws from your rack system.

Be sure the support is on the bottom facing inward.

4. Square the rail assemblies in the rack.
5. Tighten the adjustment screws and the attaching screws.
6. Place the VTrak subsystem onto the rails.
7. Secure the VTrak subsystem to the rack through each handle, using the attaching screws from your rack system.

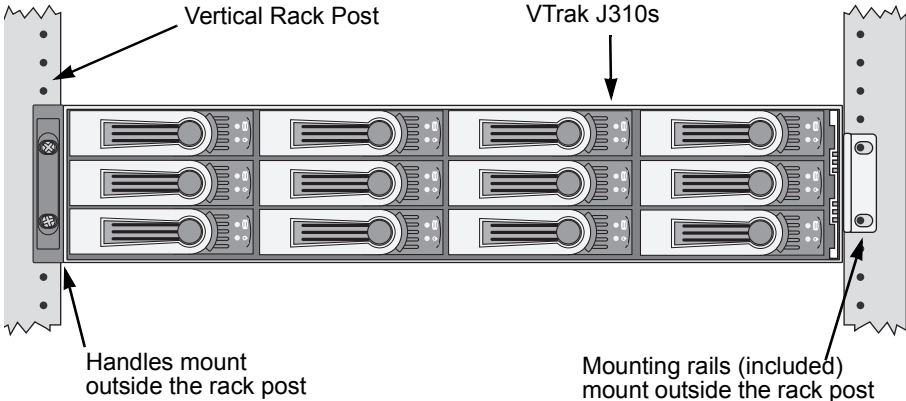
Figure 4. Rack mount assembly diagram



Mounting VTrak J310s in a Rack

The J310s subsystem installs to the rack using the supplied mounting rails. You can also use your existing rails.

Figure 5. VTrak J310s mounted in a rack with the supplied rails



Cautions

- At least two persons are required to safely lift, place, and attach the VTrak subsystem into a rack system.
- Do not lift or move the VTrak subsystem by the handles, power supplies or the controller units. Hold the subsystem itself.
- Do not install the VTrak subsystem into a rack without rails to support the subsystem.
- Only a qualified electrician who is familiar with the installation procedure should mount and install the VTrak subsystem.
- Be sure all switches are OFF before installing the VTrak subsystem or exchanging components.

To install the VTrak subsystem into a rack with the supplied mounting rails:

1. Check the fit of the mounting rails in your rack system. See Figure 7.
2. Slide the plates out of the mounting rails.
3. Attach one plate to each side of the VTrak subsystem.
Line-up the six holes in the plate with the corresponding holes in the subsystem. Attach each plate with six screws (included). See Figure 6.
4. Slide one of the rails over the plate on one side of the enclosure.

- The rail is designed to slide freely over the plate.
5. Attach a flange to each end of the rail, with the rail on the opposite side of the flange from the two-hole bracket.
 6. Install the rail adjustment screws (included) through the flange into the rail. There are four screws for each flange. See Figure 7.
 7. Place the subsystem with mounting rails into your rack system.
 8. Attach the mounting rail assemblies to the outside of the rack posts, using the attaching screws from your rack system.
 9. Square the rail assemblies in the rack.
 10. Tighten the adjustment screws and the attaching screws.
 11. Place the VTrak subsystem onto the rails.
 12. Secure the VTrak subsystem to the rack through each handle, using the attaching screws from your rack system.

Figure 6. Sliding flange installation

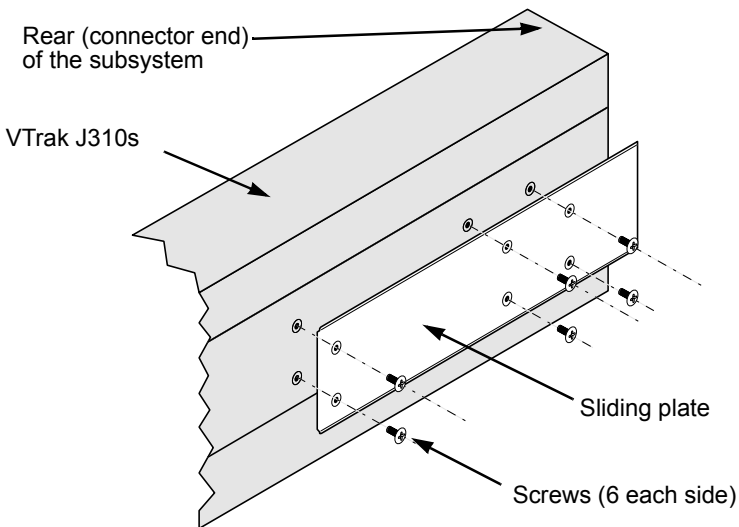
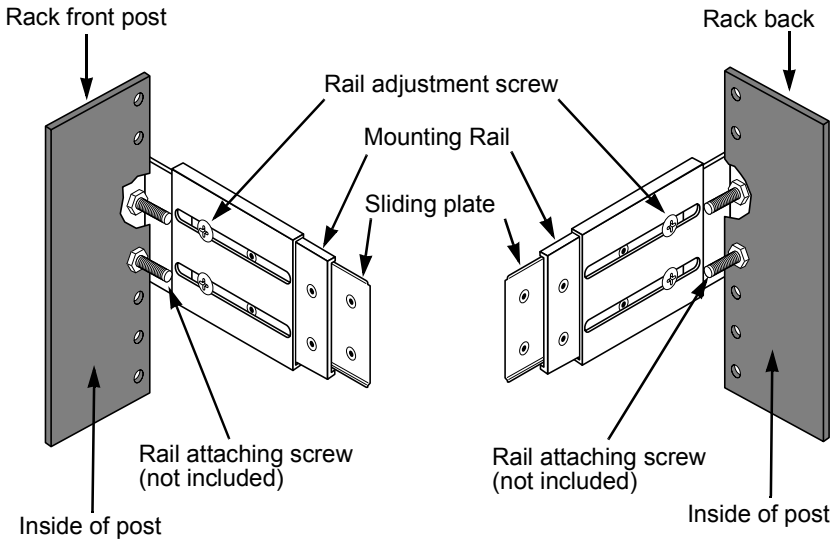


Figure 7. Mounting rail installation



Installing Disk Drives

Populate the VTrak with 3.5-inch SAS or SATA disk drives.

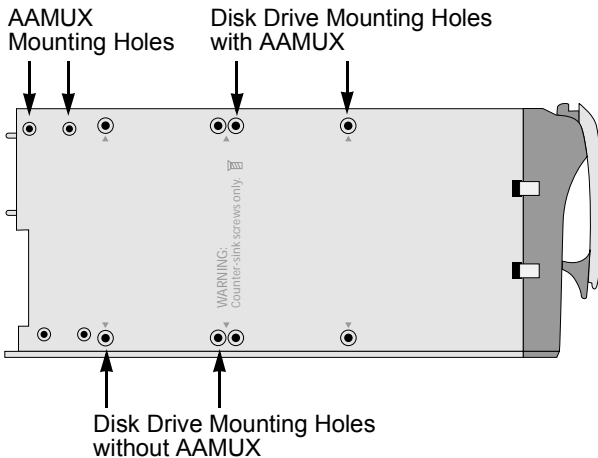
Install all of the drive carriers into the J610s or J310s enclosure to ensure proper airflow, even if you do not populate all the carriers with disk drives.



Caution

Use only the counter-sink screws supplied with the J610s or J310s unit. Use of other types of screws can damage the adjacent drives.

Figure 8. J610s and J310s unit drive carrier mounting holes



1. Remove the front bezel (drive door).
2. Remove a disk drive carrier.
3. Optional. The AAMUX adapter is recommended for J610s and J310s enclosures with two I/O modules, so that both modules can access a SATA disk drive.

Place the optional AAMUX into the disk drive carrier and attach it with the four screws.

- Install only the screws supplied with the AAMUX.
 - The AAMUX fits into the carrier with the SAS connector at the back. See Figure 6 on page 18
 - Snug each screw. Be careful not to over tighten.
4. Carefully lay the drive into the drive carrier at the front, so that the screw holes on the bottom line up.

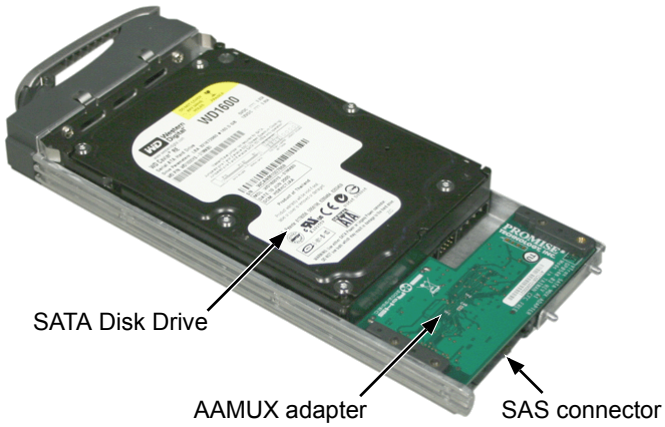
If you installed an AAMUX, lay the SATA disk drive in the carrier and slide it so the power and data connectors insert in to the AAMUX. See Figure 10 on page 18.

5. Insert the screws through the holes in the drive carrier and into the bottom of the disk drive (see Figure 5).
 - Install only the screws supplied with the VTrak.
 - Install four screws per drive.
 - Snug each screw. Be careful not to over tighten.
6. Reinstall the drive carrier into the VTrak chassis.
7. Repeat steps 2 through 5 until all of your disk drives are installed.
8. Replace the front bezel.

Figure 9. Drive carrier with SAS disk drive



Figure 10. Drive carrier with SATA disk drive and AAMUX



Cautions



- If you plan to operate your VTrak with fewer than a full load of disk drives, install all of the drive carriers into the enclosure, to ensure proper airflow for cooling.
- A VTrak J610s or J310s carrier is similar in appearance but is NOT interchangeable with a VTrak M500f/i/p drive carrier.

Important



Be sure each drive is securely fastened to its carrier. Proper installation ensures adequate grounding and minimizes vibration. Do not install drives with fewer than four screws.

Drive Numbering

Each disk drive in the J610s and J310s units is identified by a number that corresponds to the Port number used for management. See “Link Command” on page 37.

Numbers are stamped above each drive bay for easy identification.

Figure 11.VTrak J610s drive slot numbering

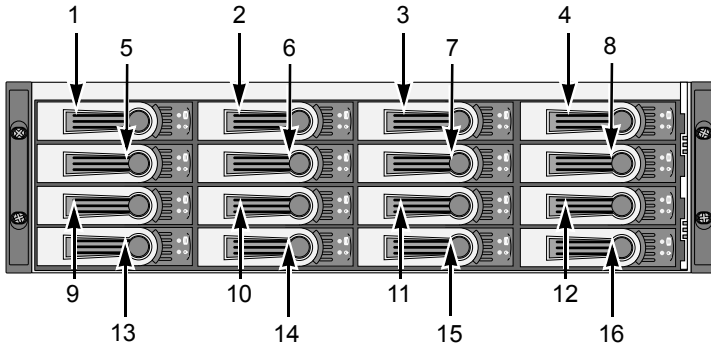
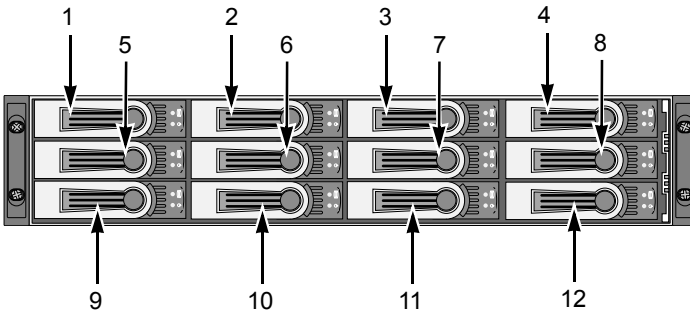


Figure 12.VTrak J310s drive slot numbering



Setting Up Data Cable Connections

The VTrak J610s or J310s unit provides Direct Attached Storage (DAS) support to the Host PC.

Figure 13. VTrak J610s has one or two I/O modules

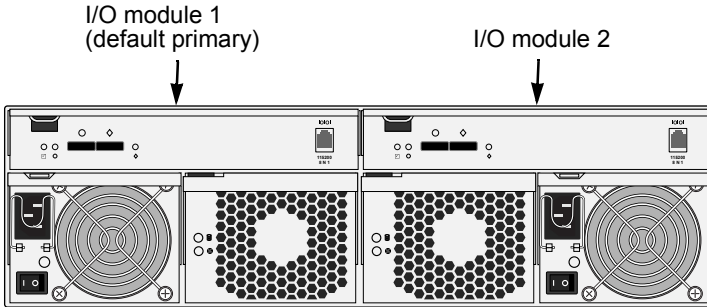
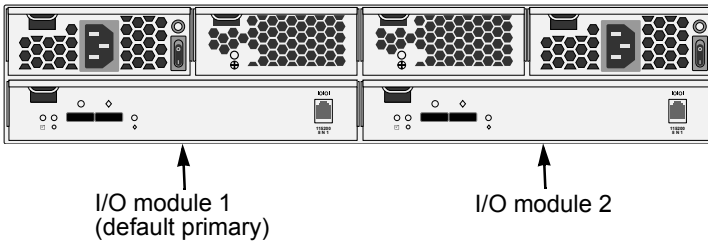


Figure 14. VTrak J310s has one or two I/O modules

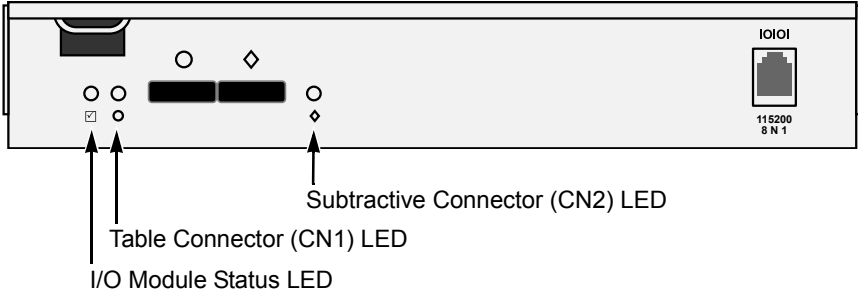


There can be one or two Input Output Modules (I/O modules) on the J610s or J310s unit.

- If your J610s or J310s has two I/O modules, I/O module 1 (on the left) is the default primary.
- If your J610s or J310s has only one I/O module, that I/O module is the default primary.

Under SAS specifications, both I/O modules are active at the same time. The terms *primary* and *secondary* are for enclosure management purposes only. To verify which I/O module is the default primary, see “Enclosure Command” on page 34.

Figure 15. *VTrak J610s and J310s I/O modules have one subtractive-routed port and one table-routed port*



Each I/O module has one table-routed external receptacle (CN1) and one subtractive-routed external receptacle (CN2).

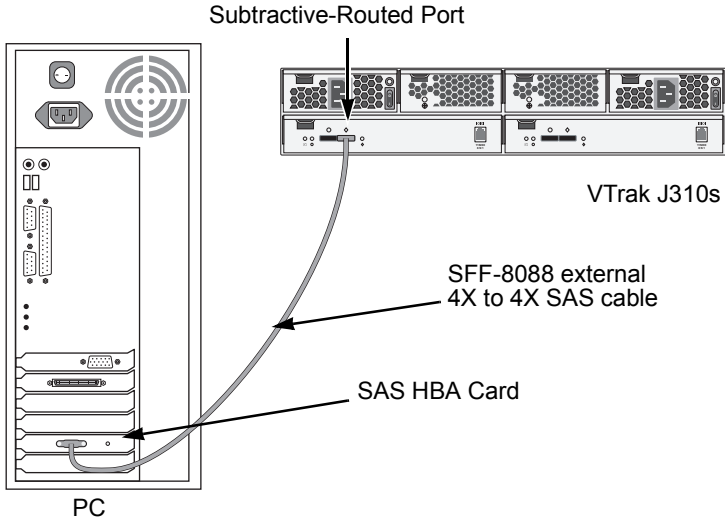


Note

SAS HBA cards are User-supplied items. They are not included with the VTrak unit.

Basic DAS Connection

Figure 16. An example of a basic DAS connection between one Host PC and one VTrak J310s unit. The J610s is similar



The arrangement above is the minimum DAS system with a single SAS HBA card in the Host PC. Connect the SAS card to the subtractive-routed port (CN2) on the I/O module.

Use a SFF-8088 4X to 4X external SAS cable with thumbscrew connectors (supplied with the J610s or J310s unit).

Because the Host SAS HBA card is an end device, you can connect it to either of the two SAS ports (CN1 or CN2) on the J610s or J310s unit's I/O module.

Cascading DAS Connection

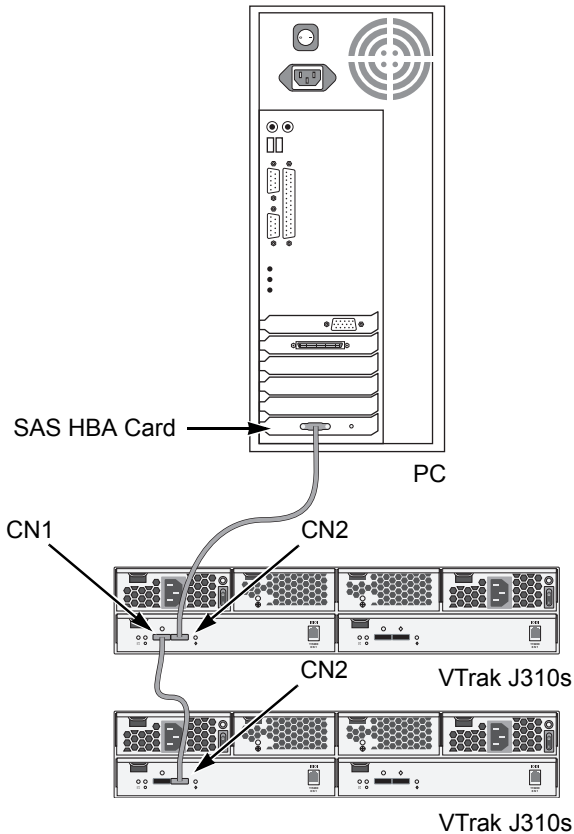
If you are using multiple J610s or J310s units and want to manage them from the same SAS HBA card, connect the J610s or J310s units in a cascade.

Connect the SAS HBA card in the Host PC to the subtractive-routed port (CN2) of the I/O module. Use a SFF-8088 4X to 4X external SAS cable (supplied with the J610s or J310s unit).

Connect the I/O module's table-routed port (CN1) on the first J610s or J310s unit to the subtractive-routed port (CN2) on the next J610s or J310s unit.

You can cascade up to four J610s or J310s units in this manner. You can mix J610s and J310s units in the same cascade.

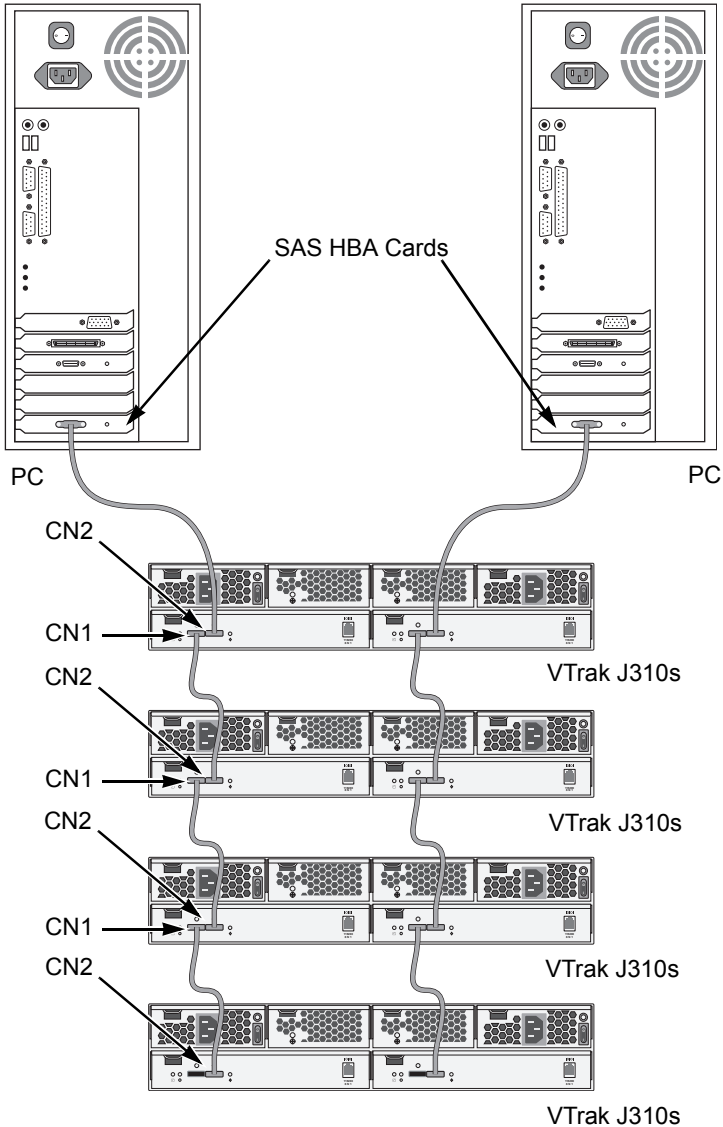
Figure 17. An example of a cascaded DAS connection between one Host PC and two VTrak J310s units. The J610s is similar



Redundant DAS Connection

The arrangement below is a DAS system with full redundancy.

Figure 18. An example of a redundant DAS connection between two Host PCs and four cascaded VTrak J310s units. The J610s is similar



The arrangement requires J610s or J310s units with dual I/O modules and two Host PCs with a SAS HBA card in each PC.

Connect the SAS HBA card in the first Host PC to the subtractive-routed port (CN2) on an I/O module of the first J610s or J310s unit.

Connect the SAS HBA card in the second Host PC to the subtractive-routed port (CN2) on the other I/O module of the first J610s or J310s unit.

Connect the table-routed ports (CN1) on the I/O modules of the first J610s or J310s unit to the subtractive-routed ports (CN2) on the I/O modules of the next J610s or J310s unit.

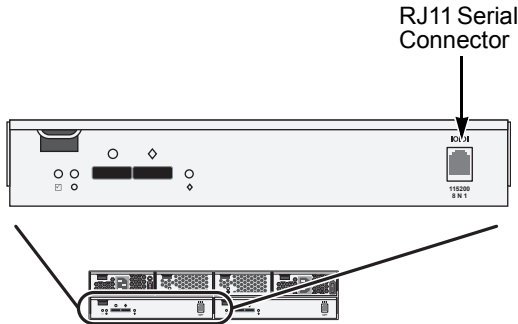
Connect the remaining J610s or J310s units in the same manner. You can mix J610s and J310s units in the same cascade.

Use SFF-8088 to SFF-8088 SAS cables to connect the J610s or J310s units.

Setting Up Serial Cable Connections

RS232 serial communication enables the Command Line Interface (CLI) and Command Line Utility (CLU) on your PC to monitor and control the VTrak. On VTrak, RS232 communication goes through the RJ11 serial connector on each controller.

Figure 19. A serial connector is located on the I/O module. The J310s is shown. The J610s is similar



To set up a serial cable connection:

1. Attach the RJ11 end of the RJ11-to-DB9 serial data cable, supplied with the VTrak, to the RJ11 serial connector on one of the I/O modules.
2. Attach a null-modem cable to the DB9 end of the RJ11-to-DB9 serial data cable.
3. Attach the other end of the null-modem cable to a serial port on the Host PC or Server.

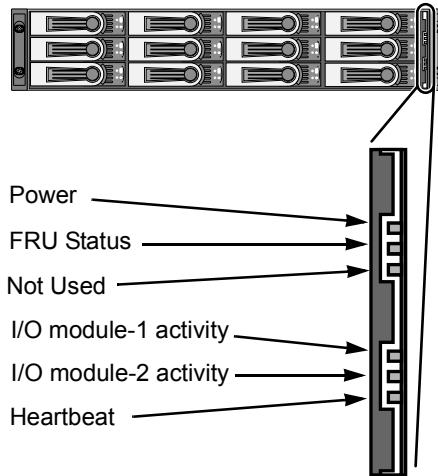
If your PC has two DB9 COM ports, and your J610s or J310s unit has two I/O modules, you can connect a second null-modem cable and RJ11-to-DB9 serial data cable the I/O module on the right.

See “Setting Up Data Cable Connections” on page 20 for an explanation of which I/O module is the default primary. To verify which I/O module is the default primary, see “Enclosure Command” on page 34.

Connecting the Power

Plug the power cords and switch on both power supplies. When the power is switched on, the LEDs on the front of the VTrak will light up.

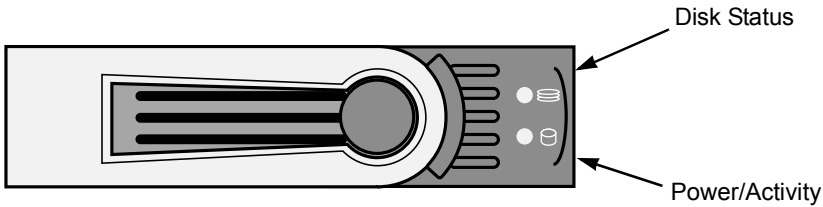
Figure 20. VTrak J310s front panel LED display. The J610s is similar



When boot-up is finished and the VTrak is functioning normally:

- The heartbeat LED blinks green once every 3 seconds if one I/O module is installed, or twice every 3 seconds if two I/O modules are installed.
- Power and FRU LEDs display green continuously.
- I/O module LEDs flash green if there is activity on that connection.

There are two LEDs on each Drive Carrier. They report the presence of power and a disk drive, and the current condition of the drive.

Figure 21. VTrak J610s/J310s disk carrier LEDs

Within one minute, the Power/Activity should display Green.

If there is no disk drive in the carrier, the Disk Status LED and the Power/Activity LED will remain dark.

Setting Up the CLI Connection

The J610s or J310s unit has a Command Line Interface (CLI) to manage all of its functions, including customization. Access the CLI via your PC's terminal VT100 or ANSI emulation program, such as Microsoft HyperTerminal.

With the J610s or J310s unit running and the RJ11-to-DB9 serial data cable with a null-modem cable connected to the primary I/O module:

1. Change your terminal emulation program settings to agree with the following:
 - Bits per second: 115200
 - Data bits: 8
 - Parity: None
 - Stop bits: 1
 - Flow control: none
2. Start your PC's terminal emulation program.
3. Press Enter once to launch the CLI.

The **cli>** prompt on your screen indicates that you have a connection and the CLI is ready to accept commands.

See "CLI Command Set" on page 33.

Chapter 3: Management

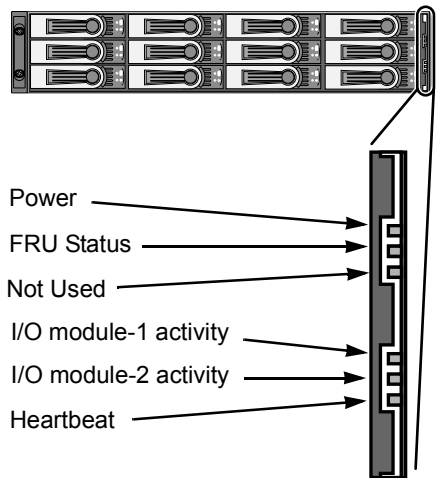
- Front Status Indicators (below)
 - Drive Status Indicators (page 24)
 - I/O Module Status Indicators (page 25)
 - CLI Command Set (page 26)
-

Front Status Indicators

Even though the Command Line Interface (CLI) offers comprehensive monitoring of VTrak, the LED indicators on the VTrak J610s or J310s unit provide important status information.

When the power is switched on, the LEDs on the front of the VTrak will light up.

Figure 1. VTrak J310s front panel LED display. The J610s is similar



When boot-up is finished and the VTrak is functioning normally:

- The heartbeat LED blinks green once every 3 seconds if one I/O module is installed, or twice every 3 seconds if two I/O modules are installed.
 - Power and FRU LEDs display green continuously.
 - I/O module LEDs flash green if there is activity on that connection.
-

LEDs	State				
	Dark	Steady Green	Flashing Green	Amber	Red
Power	System Off	Normal			
FRU*	System Off	Normal		1 CU and/or 1 PSU failed	2 CU and/or 2 PSU failed
I/O Module 1 or 2	No Activity		Activity		
Heartbeat	System Off		Normal**		

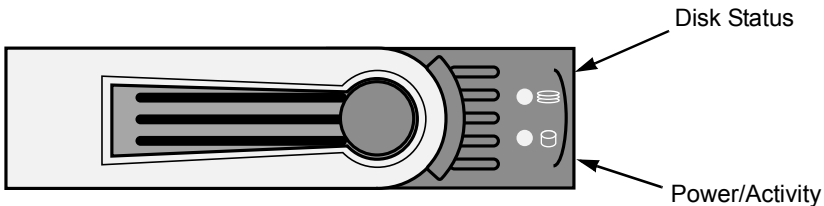
* Field Replacement Unit: Cooling Unit (CU) or Power Supply Unit (PSU)
 ** Blinks intermittently.

Drive Status Indicators

After a few moments the Power/Activity should display Green.

If there is no disk drive in the carrier, the Disk Status LED and the Power/Activity LED will remain dark.

Figure 2. VTrak J610s/J310s disk carrier LEDs



The VTrak spins up the disk drives sequentially in order to equalize power draw during start-up. After a few moments the Power/Activity and Disk Status LEDs should display green.

If you have SATA disk drives installed without an AAMUX adapter (see page 16), the Power/Activity LED behavior depends on the specific disk drive.

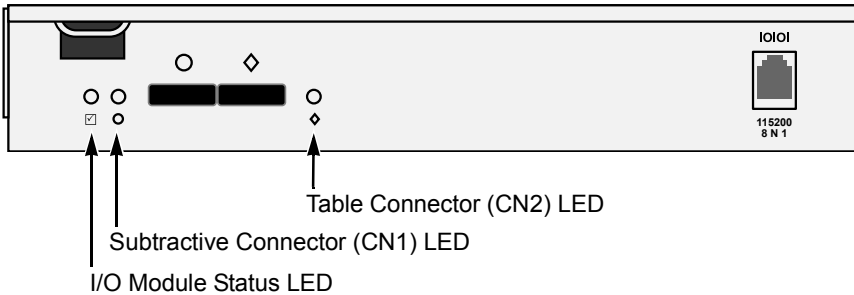
The Disk Status LED behavior depends on your HBA or RAID controller. See the table below.

LEDs	State		
	Dark	Steady Green	Flashing Green
Power/Activity*	No Drive	Drive Present	Activity
Status**	HBA/RAID controller determines the LED behavior		
<p>* Refers to SAS drives or SATA drives with an AAMUX adapter. For SATA drives without an AAMUX adapter, LED behavior depends on the specific disk drive.</p> <p>** Refer to the user documentation for your HBA or RAID controller for this information.</p>			

I/O Module Status Indicators

The VTrak J610s or J310s I/O module has LEDs that indicate activity on each of its ports.

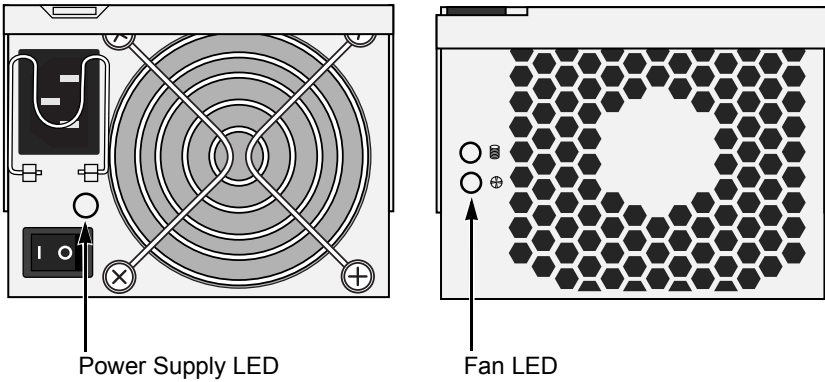
Figure 3. VTrak J610s and J310s I/O Module LEDs



The I/O module status LED shows red at startup. Within 2 or 3 seconds, it turns green to indicate that the I/O module is ready.

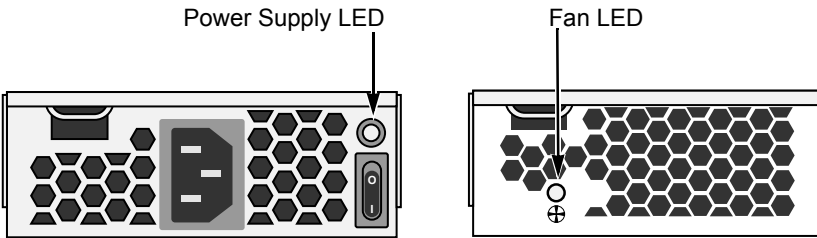
LEDs	State			
	Dark	Steady Green	Flashing Green	Red
Connectors	Link Down	Link Up	Activity	
I/O Module Status	Off	Ready		Starting up*
* Turns green 2 to 3 seconds after subsystem startup.				

Figure 4. VTrak J610s power supply and fan LEDs



The battery LED on the cooling unit has no function on the VTrak J610s and J310s models.

Figure 5. VTrak J310s power supply and fan LEDs



Under normal conditions, the power supply and fan LEDs should display green.

LEDs	State		
	Dark	Green	Red
Power supply	Not detected	OK	Failed
Fan	Not detected	OK	Failed

To check a component's installation, follow the same procedure as replacing the component, except that you reinstall the original component rather than a new one. In most cases, this action fixes a bad connection and allows VTrak to detect the component. If this action does not correct the problem, replace the unit.

CLI Command Set

The CLI has the following set of commands:

cable – Specifies the length of cable for optimal signal quality.

enclosure – Displays full information on the J610s or J310s enclosure and all its components, expander addresses and SAS addresses.

help – Use alone or with a command, such as **help enclosure**, **enclosure -help** or **enclosure -h**.

link – Displays the current status of the Phys (links) and the error counter.

route – Displays addresses of components through a downstream (expansion) connection.

uptime – Displays the number of days, hours, minutes and seconds since the firmware was loaded (the VTrak was started or restarted).

vpdr – Displays vital product data on field replaceable units.

? – Use alone or with a command, such as **? enclosure** or **enclosure -?**



Note

Commands are case-sensitive. Disable the Caps Lock on your keyboard.

Cable Command

The Cable command displays the current cable length settings for the two Host ports and the Expansion port. The I/O module supports cables from 1 to 5 meters in length.

To view current settings, at the **cli>** prompt, type **cable** and press Enter.

```
cli>cable
```

```
CN#1 Cable Length = 1 meter
```

```
CN#2 Cable Length = 1 meter
```

CN#1 and CN#2 are the external SAS connectors on the I/O module. See “Setting Up Data Cable Connections” on page 20.

To change the settings, enter the **cable mod** command, the connector number and cable length. You can specify a cable length from 1 to 8 meters.

For example, to set the Expansion connector for a 3-meter cable, at the **cli>** prompt, type **cable -a mod -s “cn2=3”** and press Enter.

To verify the setting change, at the **cli>** prompt, type **cable** and press Enter.

```
cli>cable
```

```
CN#1 Cable Length = 1 meter
```

```
CN#2 Cable Length = 3 meter
```

Note the cable length change for CN2.

Enclosure Command

The Enclosure command:

- Displays information about the J610s or J310s enclosure (below)
- Enables you to make enclosure settings (page 36)

Information

The Enclosure command displays information about the J610s or J310s enclosure, including:

- Time since power-up
- Enclosure type
- I/O module information
- PSU (power supply) status and fan speeds
- Blower status and fan speeds
- Temperature sensor readings
- Temperature threshold settings
- Voltage sensor readings
- Expander SAS addresses
- Attached SAS addresses

The CLI reports information for the I/O module to which it is connected and for the rest of the components in the J310s enclosure.

Under SAS specifications, both I/O modules are active at the same time. For management purposes, the default primary I/O module role is **Primary**. If a second I/O module is present, its role is **Secondary**. See the arrow below for I/O Module Role in the display. Also see “Setting Up Data Cable Connections” on page 20.

In a J610s or J310s unit with two I/O modules, if the primary I/O module fails or is removed, the remaining I/O module becomes the default primary I/O module and assumes the **Primary** role. If the other I/O module is repaired or replaced, it becomes the secondary I/O module and assumes the **Secondary** role.

At the **cli>** prompt, type **enclosure** and press Enter.

```
cli> enclosure
```

```
-----  
Time Since Power Up: 1 hour 46 minutes 36 seconds
```

```
Enclosure: J310s-12Bay
```

```

I/O Module ID: 1           Max Num Of I/O Modules: 2
FwVersion: 1.00.0000.00  I/O Module Role: Primary ←
MaxNumOfHDSlots: 12      MaxNumOfPSUs: 2
MaxNumOfFans: 4          MaxNumOfBlowers: 2
MaxNumOfTempSensors: 8   MaxNumOfVoltageSensors: 5

```

```

=====
PSU   Status           Fan1Speed      Fan2Speed
=====
1     Operational      14735 rpm     15037 rpm
2     Operational      15340 rpm     14361 rpm

```

```

=====
Blower Status      Speed
=====
1     Operational      4017 rpm
2     Operational      4066 rpm

```

```

=====
ID  Location    Temp Reading  ID  Location    Temp Reading
=====
1.  Backplane   32C/89F      2.  Backplane   32C/89F
3.  Backplane   31C/87F      4.  Backplane   30C/86F
5.  I/O Module1 40C/104F     6.  I/O Module1 30C/86F
7.  I/O Module2 36C/96F      8.  I/O Module2 28C/82F

```

Thermal Management: Enabled

Allows to shut down the system when critical temperature is reached: Yes

Current minimum fan speed setting: medium low

Enclosure Temp Threshold: 61C/141F (critical) 51C/123F (warning)

Controller Temp Threshold: 71C/159F (critical) 61C/141F (warning)

```

=====
VoltageSensor  Voltage
=====

```

```

1           3.3V
2           5.2V
3           5.2V
4          12.5V
5           1.2V

```

Expander SAS Address:

SAS Base Addr:50 00 15 5D 21 AB 02 00

SSP SAS Addr: 50 00 15 5D 21 AB 02 3E

SMP SAS Addr: 50 00 15 5D 21 AB 02 3F

Attached SAS Address:

D01 SAS Addr: 50 00 15 E0 11 4E 5E B2
D02 SAS Addr: 50 00 15 E0 11 4E 80 C2
D03 SAS Addr: 50 00 15 E0 11 4C 22 02
D04 SAS Addr: 50 00 15 E0 11 4D E2 22
D05 SAS Addr: 50 00 15 E0 11 4D 8F B2
D06 SAS Addr: 50 00 15 E0 11 4D D0 62
D07 SAS Addr: 50 00 15 E0 11 4D DE E2
D08 SAS Addr: 50 00 15 E0 11 4D 8E F2
D09 SAS Addr: 50 00 15 E0 11 4C 97 62
D10 SAS Addr: 50 00 15 E0 11 4C 36 62
D11 SAS Addr: No Device Attached
D12 SAS Addr: No Device Attached
CN1 SAS Addr: 50 06 05 B0 00 01 69 64
CN2 SAS Addr: No Device Attached
CN3 SAS Addr: 50 00 15 5D 21 AA 12 3F

Settings

The Enclosure command enables you to make settings for the enclosure. The J310s is shown. The J610s is similar.

- Enclosure Critical Temperature – 51°C (123°F) to 61°C (141°F), measured at the backplane
- Enclosure Warning Temperature – 10°C (50°F) to 51°C (123°F), measured at the backplane
- Controller Critical Temperature – 61°C (141°F) to 71°C (160°F), measured inside the I/O module
- Controller Warning Temperature – 10°C (50°F) to 61°C (141°F), measured inside the I/O module
- Thermal Management – Monitors enclosure temperature, adjusts fan speeds, displays red LED on cooling unit when a fan fails
- Automatic Shutdown – Shuts down the J310s when it reaches the enclosure or controller critical temperature
- Minimum Fan Speed – Specifies the minimum fan speed when the J310s reaches enclosure or controller warning temperature

To set the enclosure critical temperature to 61°C (141°F), at the **cli>** prompt, type **enclosure -a mod -s "enc_critical=61"** and press Enter.

To enable Thermal Management, at the **cli>** prompt, type **enclosure -a mod -s "thermalmanager=1"** and press Enter.

For this command, a 1 enables and a 0 disables.

To enable Automatic Shutdown, at the **cli>** prompt, type **enclosure -a mod -s "allowshutdown=1"** and press Enter.

For this command, a 1 enables and a 0 disables.

To set the minimum fan speed to medium high, at the **cli>** prompt, type **enclosure -a mod -s "minfanspeed=3"** and press Enter.

For this command, 1 means low, 2 means medium-low, 3 means medium-high, and 4 means high. The actual speed depends on the fan manufacturer.

For a complete list of Enclosure commands, at the **cli>** prompt, type **enclosure -h** and press Enter.

Help Command

The J610s and J310s CLI uses the standard Unix online help system.

For general help, at the **cli>** prompt, type **help** and press Enter.

For help with a specific function, type the name of the function and **help** or **-h**. For example:

- At the **cli>** prompt, type **cable -h** and press Enter.
- At the **cli>** prompt, type **cable -help** and press Enter.
- At the **cli>** prompt, type **help cable** and press Enter.

Link Command

The Link command displays information about the J310s links, including:

- Link Status
- Link Counter

At the **cli>** prompt, type **link** and press Enter.

Link Status:

	Port	Type	Rate	Init	Dev	Link	PRdy
P 0	D01	SAS	3.0G	OK	End	----	Rdy
P 1	D02	SAS	3.0G	OK	End	----	Rdy
P 2	D03	SAS	3.0G	OK	End	----	Rdy
P 3	D04	SAS	3.0G	OK	End	----	Rdy
P 4	D05	SAS	3.0G	OK	End	----	Rdy
P 5	D06	SAS	3.0G	OK	End	----	Rdy
P 6	D07	SAS	3.0G	OK	End	----	Rdy
P 7	D08	SAS	3.0G	OK	End	----	Rdy
P 8	D09	SAS	3.0G	OK	End	----	Rdy
P 9	D10	SAS	3.0G	OK	End	----	Rdy
P10	D11	----	----	----	----	----	----
P11	D12	----	----	----	----	----	----
P12	CN1	SAS	3.0G	OK	End	----	Rdy

P13	CN1	SAS	3.0G	OK	End	----	Rdy
P14	CN1	SAS	3.0G	OK	End	----	Rdy
P15	CN1	SAS	3.0G	OK	End	----	Rdy
P16	CN2	----	----	----	----	----	----
P17	CN2	----	----	----	----	----	----
P18	CN2	----	----	----	----	----	----
P19	CN2	----	----	----	----	----	----

Port:Port Id Type:SAS Rate:Rate 3G
 Init:Init Passed Dev:Device Type Link:Link Connected
 PRdy:Phy Ready

The following items are reported in the table above:

- Link number – The links are Phys, numbered P0 through P23
- Port number – Each disk-drive slot has a Phy. Each connector has 4 Phys. D01 though D12 are disk-drive slot numbers. See “Drive Numbering” on page 19.
 CN1 and CN2 are the external SAS connectors on the I/O module. See “Setting Up Data Cable Connections” on page 20.
- Drive Type – SAS
- Data Rate – 3.0 Gb/s
- Device Type – End means an end device, Exp means an expansion device
- Link Connection – Normally, ---- is displayed. If there is a connection at the moment the link command runs, it will display CONN
- Phy Ready Status – If the port is ready, it will display Rdy

Link Counter:

	InDW	DsEr	DwLo	PhRe	CoVi	PRBS	PhCh
P 0	-----	-----	-----	-----	-----	-----	0x01
P 1	-----	-----	-----	-----	-----	-----	0x01
P 2	-----	-----	-----	-----	-----	-----	0x01
P 3	-----	-----	-----	-----	-----	-----	0x01
P 4	-----	-----	-----	-----	-----	-----	0x01
P 5	-----	-----	-----	-----	-----	-----	0x0B
P 6	-----	-----	-----	-----	-----	-----	0x01
P 7	-----	-----	-----	-----	-----	-----	0x01
P 8	-----	-----	-----	-----	-----	-----	0x01
P 9	-----	-----	-----	-----	-----	-----	0x01
P10	-----	-----	-----	-----	-----	-----	-----
P11	-----	-----	-----	-----	-----	-----	-----
P12	-----	-----	-----	-----	-----	-----	0x01
P13	0x0F	0x0E	0x01	-----	0x06	0x0C	0x02
P14	-----	-----	-----	-----	-----	-----	0x01

```

P15 ----- 0x01
P16 -----
P17 -----
P18 -----
P19 -----

```

InDW:Invalid Dword Count DsEr:Disparity Err Count
DwLo:Dword Sync Loss Count
PhRe:Phy Reset Problem Count CoVi:Code Violations Cnt
PRBS:PRBS Error Count
PhCh:Phy Change Count

The following items are reported in the table above. All counts are hexadecimal:

- Link number – Links are Phys, numbered P0 through P23
- Invalid D-word Count
- Disparity Error Count
- Phy Reset Problem Count
- Code Violation Count
- Pseudo-Random Bit-Stream Error Count
- Phy Change Count

If the count is zero, the counter shows dashes (-----). The fact that errors occur does not necessarily indicate a problem or that the J610s or J310s unit is malfunctioning.

An individual error count incrementing at intervals of less than six minutes indicates a possible problem and requires further investigation.

To clear the link error count, at the **cli>** prompt, type **link -a clear** and press Enter.

Route Command

Use this command to show the SAS addresses of the devices in your domain.

At the **cli>** prompt, type **route** and press Enter.

```

Routing Table Mapping:
Entry# SAS Address          PortID  CnID   NextEntry  NextValid
-----
0083   500000E01122C533        0x10   CN1     ----       0
0121   500000E01122C4A3        0x10   CN1     ----       0
0226   500000E01122C513        0x10   CN1     ----       0
0244   500000E011246263        0x10   CN1     ----       0
0358   500000E011231F43        0x10   CN1     ----       0
0466   500000E0112770B3        0x10   CN1     ----       0

```

0488	500000E01122C0F3	0x10	CN1	----	0
0519	500000E01122C493	0x10	CN1	----	0
0731	500000E01122C5B3	0x10	CN1	----	0
0751	500000E01122C5C3	0x10	CN1	----	0
0851	500000E01122C583	0x10	CN1	----	0
0864	5000155D21AB433E	0x10	CN1	----	0
0945	500000E0112313C3	0x10	CN1	----	0

The route command displays SAS addresses that are attached to one of the external ports on the J610s or J310s unit. Six items are reported:

- Entry Number – Arbitrary numbers, listed in sequence
- SAS Address – Of the disk drive or other component
- Port ID – Phy numbers, shown in hexadecimal
- Connector ID – One of two external SAS ports on the J610s or J310s unit
- Next Entry – The next entry number for the same SAS address
- Next Valid – 1 means there is another one. 0 means this is the last one

This device is connected to the J610s or J310s unit through connector CN1. See page 21 for a diagram of connectors on the I/O module.

If you type **route** at the **cli>** prompt and press Enter, then see the following message:

```
No SAS Routing Entry Exists
```

...it indicates that no devices are found on the table-routed (CN2) connector.

Uptime Command

The uptime command informs you of the elapsed period of time since the J610s or J310s unit was powered on.

To display uptime, at the **cli>** prompt, type **uptime** and press Enter.

```
cli>uptime
```

```
System has been running 1 hour 46 minutes 35 seconds
```

VPDR Command

The `vpdr` command displays vital product data on the major components of the J610s or J310s unit. There are six components that report vital product information.

- 1 – Controller (I/O module)
- 2 – Power Supply 1
- 3 – Cooling Unit 1
- 4 – Power Supply 2
- 5 – Cooling Unit 2
- 6 – Backplane

Specify the component by its number. For example, to display vital product data for the controller (I/O module), at the `cli>` prompt, type `vpdr -i 1` and press Enter.

```
cli>vpdr -i 1
Board ID   : 1
OEM Name   : IOC
OEM Model  : J310s
Mfg Part   : IOC-J310s-01
Mfg SN     : S0026
Mfg Rev    : A2R4
Mfg Date   : 2005:08:18
WWN        : 20 00 00 01 55 D2 1A A1
```

? Command

The VTrak CLI uses the standard Unix online help system.

For the command usage of a particular function, type the name of the function followed by `?`. For example, at the `cli>` prompt, type `cable -?` and press Enter.

For help with a particular function, type `?` followed by the name. For example, at the `cli>` prompt, type `? cable` and press Enter.

The result of typing `?` followed by the name is the same as typing `help` followed by the name.

Chapter 4: Support

- Frequently Asked Questions (below)
 - Contacting Technical Support (page 44)
 - Limited Warranty (page 47)
 - Returning product for repair (page 48)
-

Frequently Asked Questions

What kind of disk drives can I use with J610s and J310s?

The J610s and J310s support 3.5-inch Serial Attached SCSI (SAS) disk drives and SATA II disk drives. If you use SATA disk drives, on a VTrak with two I/O modules, you must also install an AAMUX adapter for each SATA drive.

How can I tell when the J610s or J310s unit has fully booted?

When the J610s or J310s unit is fully booted up, the Power and FRU LEDs will light up green. The heartbeat LED blinks green once every 3 seconds if one I/O module is installed, or twice every 3 seconds if two I/O modules are installed.

How can I tell my CLI connection is to the primary default I/O module?

After you establish the CLI connection, type Enclosure and press Enter. Look at the top of the display for an item called I/O Module Role. If the Role is **Primary**, you are connected to the default primary I/O module. If the Role is **Secondary**, you are connected to the default secondary.

What happens if a disk drive fails?

Depending on the nature of the failure, the failed drive the drive might not appear in the CLI, or the failed drive might appear with an error, when you run the **enclosure** command (see page 34) or the **link** command (see page 37).

Can I hot-swap a failed drive with a new one?

Yes. Disk drives are hot-swappable on the J610s and J310s units.

Can the J610s and J310s run using just one power supply?

Yes, it is possible to run J610s and J310s unit on a single power supply. J610s and J310s units ship with two power supplies. The J610s or J310s unit will continue running if one of the power supply fails. But deliberately leaving one power supply off negates this advantage.

In addition, leaving one power supply off reduces air flow through the J610s or J310s enclosure and can contribute to overheating. Always switch on both power supplies if your J610s or J310s unit has two.

Contacting Technical Support

Promise Technical Support provides several support options for Promise users to access information and updates. We encourage you to use one of our electronic services, which provide product information updates for the most efficient service and support.



Important

Promise offers 24x7 live technical support (in English only) for registered owners of VTrak products. To register, point your browser to:

http://www.promise.com/support/warranty/warranty_eng_pdchoose.asp

If you decide to contact us, please have the following information available:

- Product model and serial number
- BIOS, firmware and driver version numbers
- A description of the problem / situation
- System configuration information, including: motherboard and CPU type, hard drive model(s), SAS/SATA/ATA/ATAPI drives & devices, and other controllers.

Technical Support Services

Promise Online™ Web Site	http://www.promise.com/support (technical documents, drivers, utilities, etc.)
Promise Online™ eSupport	https://support.promise.com/support (online request form)

United States

E-mail Support	e-Support On-Line
Fax Support	(408) 228-1097 Attn: Technical Support
Phone Support	(408) 228-1400 option 4
If you wish to write us for support:	Promise Technology, Inc. 580 Cottonwood Drive Milpitas, CA 95035, USA

The Netherlands

E-mail Support	e-Support On-Line
Fax Support	+31 (0) 40 256 9463 Attn: Technical Support
Phone Support	+31 (0) 40 235 2600
If you wish to write us for support:	Promise Technology Europe B.V. Science Park Eindhoven 5542 5692 EL Son, The Netherlands

Germany

E-mail Support	e-Support On-Line
Fax Technical Support	+49 (0) 2 31 56 76 48 - 29 Attn: Technical Support
Phone Technical Support	+49 (0) 2 31 56 76 48 - 10
If you wish to write us for support:	Promise Technology Germany Europaplatz 9 44269 Dortmund, Germany

Italy

E-mail Support	e-Support On-Line
Fax Support	0039 06 367 12400 Attn: Technical Support
Phone Support	0039 06 367 12626
If you wish to write us for support:	Promise Technology Italy Piazza del Popolo 18 00187 Roma, Italia

Taiwan

E-mail Support	e-Support On-Line
Fax Support	+886 3 578 2390 Attn: Technical Support
Phone Support	+886 3 578 2395 (ext. 8811)
If you wish to write us for support:	Promise Technology, Inc. 2F, No. 30, Industry E. Rd. IX Science-based Industrial Park Hsin-Chu 30075, Taiwan, (R.O.C.)

China

E-mail Support	e-Support On-Line
Fax Support	+86-10-8857-8015 Attn: Technical Support
Phone Support	+86-10-8857-8085/8095
If you wish to write us for support:	Promise Technology China Room 1205, Tower C Webok Time Center, No.17 South Zhong Guan Cun Street Hai Dian District, Beijing 100081, China

Limited Warranty

Promise Technology, Inc. (“Promise”) warrants that for three (3) years from the time of the delivery of the product to the original end user:

- a) the product will conform to Promise’s specifications;
- b) the product will be free from defects in material and workmanship under normal use and service.

This warranty:

- a) applies only to products which are new and in cartons on the date of purchase;
- b) is not transferable;
- c) is valid only when accompanied by a copy of the original purchase invoice.
- d) Is not valid on spare parts, fans, and power supplies

This warranty shall not apply to defects resulting from:

- a) improper or inadequate maintenance, or unauthorized modification(s), performed by the end user;
- b) operation outside the environmental specifications for the product;
- c) accident, misuse, negligence, misapplication, abuse, natural or personal disaster, or maintenance by anyone other than a Promise or a Promise-authorized service center.

Disclaimer of other warranties

This warranty covers only parts and labor, and excludes coverage on software items as expressly set above.

Except as expressly set forth above, Promise **DISCLAIMS** any warranties, expressed or implied, by statute or otherwise, regarding the product, including, without limitation, any warranties for fitness for any purpose, quality, merchantability, non-infringement, or otherwise. Promise makes no warranty or representation concerning the suitability of any product for use with any other item. You assume full responsibility for selecting products and for ensuring that the products selected are compatible and appropriate for use with other goods with which they will be used.

Promise **DOES NOT WARRANT** that any product is free from errors or that it will interface without problems with your computer system. It is your responsibility to back up or otherwise save important data before installing any product and continue to back up your important data regularly.

No other document, statement or representation may be relied on to vary the terms of this limited warranty.

Promise's sole responsibility with respect to any product is to do one of the following:

- a) replace the product with a conforming unit of the same or superior product;
- b) repair the product.

Promise shall not be liable for the cost of procuring substitute goods, services, lost profits, unrealized savings, equipment damage, costs of recovering, reprogramming, or reproducing of programs or data stored in or used with the products, or for any other general, special, consequential, indirect, incidental, or punitive damages, whether in contract, tort, or otherwise, notwithstanding the failure of the essential purpose of the foregoing remedy and regardless of whether Promise has been advised of the possibility of such damages. Promise is not an insurer. If you desire insurance against such damage, you must obtain insurance from another party.

Some states do not allow the exclusion or limitation of incidental or consequential damages for consumer products, so the above limitation may not apply to you.

This warranty gives specific legal rights, and you may also have other rights that vary from state to state. This limited warranty is governed by the State of California.

Your Responsibilities

You are responsible for determining whether the product is appropriate for your use and will interface with your equipment without malfunction or damage. You are also responsible for backing up your data before installing any product and for regularly backing up your data after installing the product. Promise is not liable for any damage to equipment or data loss resulting from the use of any product.

Returning Product For Repair

If you suspect a product is not working properly, or if you have any questions about your product, contact our Technical Support Staff through one of our Technical Services, making sure to provide the following information:

- Product model and serial number (required)
- Return shipping address
- Daytime phone number
- Description of the problem
- Copy of the original purchase invoice

The technician will assist you in determining whether the product requires repair. If the product needs repair, the Technical Support Department will issue an RMA (Return Merchandise Authorization) number.



Important

Obtain an RMA number from Technical Support *before* you return the product and write the RMA number on the label. The RMA number is essential for tracking your product and providing the proper service.

Return **ONLY** the specific product covered by the warranty (do not ship cables, manuals, diskettes, etc.), with a copy of your proof of purchase to:

USA and Canada: Promise Technology, Inc.
Customer Service Dept.
Attn.: RMA # _____
47654 Kato Road
Fremont, CA 94538

Other Countries: Return the product to your dealer
or retailer.
Contact them for instructions
before shipping the product.

You must follow the packaging guidelines for returning products:

- Use the original shipping carton and packaging
- Include a summary of the product's problem(s)
- Write an attention line on the box with the RMA number
- Include a copy of proof of purchase

You are responsible for the cost of insurance and shipment of the product to Promise. Note that damage incurred due to improper transport or packaging is not covered under the Limited Warranty.

When repairing returned product(s), Promise may replace defective parts with new or reconditioned parts, or replace the entire unit with a new or reconditioned unit. In the event of a replacement, the replacement unit will be under warranty for the remainder of the original warranty term from purchase date, or 30 days, whichever is longer.

Promise will pay for standard return shipping charges only. You will be required to pay for any additional shipping options (such as express shipping).

Appendix A: Second I/O Module

The VTrak J610s and J310s units ship with one or two I/O modules. If your J610s or J310s came with only one I/O module, you can upgrade by installing a second I/O module. The following instructions describe how to install a second I/O module.

To install a second I/O module in a VTrak J610s or J310s unit:

1. Power down the J610s or J310s unit.
2. Press the release button on the dummy I/O module, pull the handle down and remove the dummy I/O module from the enclosure.
3. Slide the new I/O module into the slot.
4. Gently push the new I/O module all the way into the slot until the handle locks.
5. Connect your data cables to the new I/O module.
See page 20 for more information.
6. Optional. Connect your serial cable to the second I/O module.
See page 25 for more information.
7. Power up the J610s or J310s unit.

To verify proper installation and function, run the enclosure command in the CLI. Because the new I/O module is installed in the right slot, it will automatically take the *Standby* role in the CLI screen. See page 34 for more information.

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